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In This Issue

Life in a Southern Sawmill Community . . . . .
. . . . . *William T. Chambers*

National Council Meeting at Los Angeles . . . .

Los Angeles, the New Fifth City . *Jehiel S. Davis*

An Adventure in Cartography . . *Mark Jefferson*

The Parana Way to the Iguazu Falls . *Mabel Wood*

Geographical Publications . . . . . .

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VOLUME XXX MAY, 1931 NUMBER 5

LIFE IN A SOUTHERN SAWMILL COMMUNITY

WM. T. CHAMBERS
State Teachers College, Nacogdoches, Texas

Carmona is a small sawmill community in the pine forest belt of eastern Texas. It is located in Polk County about twelve miles east of Groveton, the seat of Trinity County, with which it is connected by railroad and highway. The place is a property of the Saner-Ragley Lumber Company which purchased a 10,000 acre tract of virgin pine forest here about twenty years ago, erected a mill to cut the timber, and built a village to house employees engaged in the work. The mill is located on the northern margin of the tract where railway and road give contact with lumber markets and sources from which supplies are obtained. The tram railroad by which logs are brought to the mill has been lengthened as the logging "front" receded and is now about eight miles long. When the original forest holding was cut over, the purchase of additional stumpage perpetuated the life of the industry. But the timber reserve is again nearing exhaustion, being estimated as sufficient only for eight months' continuous operation.

LANDSCAPE OF THE COMMUNITY

Carmona is situated in an expanse of typical southeastern Texas cut-over and fire-swept forest land. It has an open stand of young second-growth pine and hardwood timber with much grass, and, since it is unfenced, farmers[1] use the land as free range for cattle, hogs, goats, and sheep. The village landscape is dominated by the sawmill with its large low buildings, high smoke stacks, rows of lumber ricks, and large mill ponds. The residential area is beside the mill. The rather small, old, unpainted wooden buildings have paper and galvanized iron roofs. They are arranged in rows

[1] Farmers occupied some of the best land in this section of Texas before the rise of the lumber industry, and some of the cut-over land has also been developed for farming.

along sandy streets which divide the land into rectangular blocks, and are overrun with grasses and weeds except where traffic keeps them bare. A company store or commissary retails general merchandise including such staple commodities as flour, corn meal, bacon, beans, potatoes, canned vegetables, work clothing, shoes, and gasoline. Neatly painted relatively new community church and public school buildings present a striking contrast to the characteristically weather-beaten structures of the village. The entire population, about half of which is colored, depends directly or indirectly upon the sawmill payroll for its livelihood.

FIG. 1. Sawmill of the Saner-Ragley Lumber Company at Carmona. Note the unbroken background of second-growth forest. The margin of the logging railroad grade is seen in the extreme right foreground.

THE LUMBER INDUSTRY

The sawmill at Carmona is of moderate size, having a daily capacity of 40,000 board-feet of lumber. The turpentine camp has been discontinued because relatively small trees are being cut and prevailing prices for naval stores are low. Workers called "flatheads" fell trees at the logging front and cut their trunks into appropriate lengths. A skidder is not employed in dragging logs to the railroad track because operations are on a rather small scale. Workmen known as "swampers" clear away some of the underbrush so teams may be used in dragging logs into "bunches" at places accessible to trucks and carts which haul them to the railroad track. A loader operated by steam power places the logs upon cars, and train loads of them are transported to the mill and dumped into the log pond. Pilots guide the floating logs to a chain conveyor which drags them up an inclined trough into the mill. They are rolled upon the carriage and moved against the saws which cut them into slabs. After passing thru the edger and trimmer the lumber is

sorted into various grades and sizes, ricked upon cars, and run into the kiln where it is thoroly dried. If there is no immediate demand for the output, it is stored in warehouses to await sale. Most of the lumber is passed thru planing machines before it is shipped to market.

HOME LIFE IN THE VILLAGE

Rather heavy continuous labor and modest earning power are dominating factors in the life of the mill hand. He is tired and hungry when he comes from work at the close of day. After eating heartily of the plain nourishing foods prepared for the evening

FIG. 2. View in the residential section for white people at Carmona. Note the white sandy soil which shows in the street and the small size of trees about the homes. In places there are no trees about the residences.

meal, he ordinarily desires to remain at home and rest in preparation for the labor of tomorrow. Hence relatively little time is spent working about the home, reading, or engaging in social activities. Cultural attainments tend to be dwarfed, and interests are narrowly centered upon the satisfaction of such basic and immediate needs as food, shelter, and clothing. The mill people support candidates who favor legislation to improve their industrial condition. Political abstractions such as "honest and businesslike administration of public office" and "sound economic policy" have secondary appeal only. Loyalty to political leadership which secured semimonthly payment in cash in lieu of monthly payment in company "checks", which are accepted at the commissary in payment for merchandise, is intense.

Women participate freely in the work and cares of mill town life. They prepare and serve the family food regularly; and many of them produce food-stuffs by tending a vegetable garden, milking

a cow, or raising chickens. Poor white sandy soil limits the productivity of gardens; but free range upon grassy cut-over land makes the cost of keeping a cow negligible, and facilitates the raising of chickens altho wild animals prey upon them. The women of the community also spend much time keeping house, caring for children, and washing and ironing clothes. Limited income accentuates the housework problem by discouraging the employment of help and the purchase of labor saving devices which lighten household tasks.

The people save little or none of their incomes for use in time

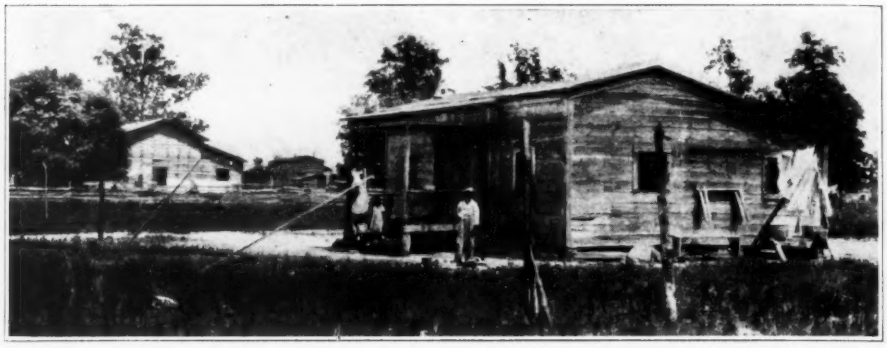

FIG. 3. A home in the Negro section of Carmona. The houses are smaller and less well equipped than in the white section.

of emergency. This is said to be about as true of well paid men as of ordinary workmen. Apparently this is an adjustment to sawmill town environment which thwarts the development of a stable home owning society by causing all the people to live in rented houses and depend upon a single set of officials for continued employment there. As a result families are unprepared for sickness, accident, or loss of employment due to occasional depression of the lumber industry. In such cases the company grants employees limited credit at the commissary and discontinues the collection of house rent. It assumes liability for necessary hospitalization and medical service. Law requires the company to insure employees against industrial accident, and income from these policies frequently helps families thru trying experiences. Many of the men also have some life insurance. These arrangements facilitate evasion of such disaster as comes to persons having little or no financial resources.

The home and home life at Carmona are fairly typical of South-

ern sawmill towns. Workmen rent from the company dwellings which are supplied with water piped from a deep well, and are lighted by electricity generated at the mill. Staple food-stuffs are purchased from the company store at reasonable prices. Fresh vegetables, including tomatoes, sweet and Irish potatoes, watermelons, cantaloupes, and various sorts of peas are purchased from farmers who peddle produce in the village. Farmers also slaughter cattle and hogs raised on the free range, and market meat in Carmona. Foods obtained in the forest include blackberries, Mayhaws, nuts, muscadines (a variety of wild grape), and persimmons.

FIG. 4. The building on the right is the school, and that on the left is the church. Note the rick of firewood between the buildings, the bare sandy soil about them, and the woods in the background.

Fish, squirrels, rabbits, deer, quail, and wild ducks and geese contribute to the meat supply. Firewood for cooking and heating is made chiefly from scraps of wood obtained at the mill, altho some oak wood is purchased from farmers for use in heating. Many families own automobiles, and frequently drive to Groveton, the nearest important retail center. Here they shop and make contacts with the life of that small city.

Little is done to increase the attractiveness and beauty of the home and community. All buildings except the church and school are owned by the lumber company. None of them are painted, and their weather-beaten aspect is an expression of declining value and increasing neglect as timber reserves approach exhaustion. Employees move so frequently that they have small incentive to improve their rented homes by planting trees, cultivating shrubs,

repairing fences, and developing the lawn. Deterioration is the inevitable result of temporary interest in the residences by both their owners and tenants. It is notable that virgin forest trees were not spared to shade homes from the unrelenting sunshine of this subtropical land. Men seem to develop antipathy for trees in regions where forest occupies the land. Farm homes in the section are also commonly placed in treeless clearings altho most of the land is still in woods.

FIG. 5. Cattle upon the range in an alluvial area near Carmona. The bush grown clearing in the foreground is an electric transmission line right of way.

Salaried employees, skilled workmen, and their families compose the local aristocracy. The superintendent of the mill is the highest paid man in the community and heads this group. It includes managers of the different departments of the mill, the commissary manager, saw filer, blacksmith and mechanic, engineer, log scaler, sawyer and physician. The ministers and teachers of the community are also admitted. This group has a relatively high standard of living because it possesses greater earning power and, excepting ministers and teachers, its members purchase supplies at cost from the commissary. These people have rather well furnished homes, possess radios, drive good automobiles, and employ help with the household work. As a group they are better educated than their fellows. Their work is less tiresome, they

read the *Houston Post Dispatch,* subscribe to a few magazines, and have higher educational and social standards than other members of the community.

RECREATION AND COMMUNITY LIFE

Recreational life at Carmona is intimately related to the forest environment. The wild game of the area includes deer, squirrels, foxes, wolves, turkeys, quail, and rabbits. It attracts men to spend

FIG. 6. A woodland landscape near Carmona. Note the rotting stumps, the thin stand of young pine trees, and the spaces occupied by grass.

much of their leisure hunting in season and practicing to develop marksmanship. Ducks and geese are hunted on the mill ponds during autumn and spring. The supply pond from which boiler water is obtained affords favorable places for swimming. Fish are caught here and in the log pond, and trips are also made to the Trinity and Neches rivers. Loafing and chatting with neighbors are other popular pastimes, baseball games and motoring are important attractions, and some families have a radio or one or more musical instruments.

Community life is well organized at Carmona. The commissary is a community store. There is a community or mill physician. The company deducts $1.50 a month from the earnings of married men and $1.00 from those of single men to use in employing a doctor, and his medical services are available to the people without addi-

tional charge. The company purchases group accident insurance for its employees, the policies being payable to the latter or their heirs in case of maturity. The church is a community institution. Methodist and Baptist ministers conduct services on alternate Sundays, and there is a Methodist Sunday school and a Baptist Young Peoples Union. Services are attended by the religious people of the community irrespective of denominational membership. The public school has grades from one to six inclusively, and pupils who wish to continue their work further are transferred to the school in Groveton. The white and Negro sections of Carmona are very distinct. They are situated some distance apart on opposite sides of the railroad track; and each has its own church, school, and self-contained social life.

FUTURE OF THE COMMUNITY

What will succeed the era of forest exploitation which is drawing to a close at Carmona? Timber reserves now held by the company will soon be exhausted; and, altho some additional stumpage may be purchased, increasing scarcity of mature timber in the district indicates that ere long the mill must close down. Trees are growing on the cut-over land in spite of its use as free range and the ravages of fire, but they are too small and scattered to make good saw material. Utilization of this timber in making boxes, crates, laths, or paper would extend the life of the village. If the land were offered for sale to farmers, Carmona might become an agricultural community; but poor sandy soil, continued agricultural depression, steady urbanization of American society, and meager development obtained by this means in neighboring areas indicate that occupation of the land by farmers would occur slowly if at all. Staple field crops do not thrive without heavy fertilization and intelligent soil building. Melons, sweet potatoes, tomatoes, peanuts, and several varieties of peas grow well; but commercial production would involve marketing in competition with established producers, most of whom have the advantages of better transportation services and greater proximity to large markets than Carmona. Given protection from fire, a dense stand of young trees would soon spring up, and if hogs were kept off the range, longleaf pines would grow[2] yielding a harvest of naval stores as

[2] Hogs prevent development of second-growth longleaf pine timber by rooting up and devouring the roots of the young trees.

well as poles, posts, and logs. The land might be fenced to exclude the livestock of the free range, and grazed continuously while another stand of timber develops. Used in this way it would yield an income while trees were growing, and rather close grazing of the grass would greatly reduce fire hazards.

These at least are some of the possibilities. Whether any of them will be realized in the near future is uncertain. In any case the land and its mineral right[3] are considered much too valuable to admit abandonment and reversion to the state for non-payment of taxes. In the meantime the fate of Carmona is uncertain. Will it successfully develop another economic base; or must it become, as many other Southern sawmill towns have, merely a few rows of rotting abandoned buildings along silent deserted streets in an expanse of sparsely peopled woodland.

[3] Most land owners in Texas confidently anticipate the discovery of oil upon their property.

National Council Meeting at Los Angeles

Two geography sectional meetings will be held in connection with the National Education Association at Los Angeles. These meetings will be held in the Period Group Hall, Los Angeles Museum. Arrangements for the programs have been made by Miss Erna Grassmuck, State Teachers College, Indiana, Penn. Geography teachers should urge the N.E.A. delegates from their district to attend one or more of these meetings.

FIRST SESSION, JUNE 30, 2:00 P.M.

Presiding, Harold Fairbanks, Burbank, California

Demonstration Lesson with Junior High School Pupils. Beeda Metcalf, Berendo Junior High School, Los Angeles

Geography in Modern Curriculum Building. Harriet Elliott, State Teachers College, West Chester, Pennsylvania

Lake Titicaca Region. Illustrated with lantern slides. George M. McBride, University of California at Los Angeles

SECOND SESSION, JULY 2, 2:00 P.M.

Presiding, Myrta Lisle McClellan, University of California at Los Angeles

What Constitutes Geography. Vinnie B. Clark, State Teachers College, San Diego, California

Relation of Geography to Business. John B. Appleton, Scripps College, Claremont, California

Hawaii. Illustrated with lantern slides. Otis W. Freeman, State Normal School, Cheney, Washington

LOS ANGELES, THE NEW FIFTH CITY

JEHIEL S. DAVIS
Van Nuys High School
Los Angeles

While the several largest cities of the United States have maintained their relative population rank Los Angeles has jumped from tenth to fifth place. Only New York, Chicago, Philadelphia, and Detroit are now larger than Los Angeles and there is a considerable gap between it and the former fifth city, Cleveland. Ten years ago only the three largest ones had over a million persons altho Detroit had close to a million. Now five are well above the million mark in population.

The growth of Los Angeles into fifth rank has been so steady and rapid, has continued so far beyond the possibility of growth thru artificial boom or resort causes, and is so separated from the industrial northeast that its development is of particular geographic interest. Possibly there is some connection between its growth and the general trend of peoples towards milder lands,[1] but a more detailed study of the situation may reveal some interesting relationships between the growth of the city and the site on which it is built.

LOCATION

Los Angeles spreads widely over a section of the foothills of the San Gabriel Mountains and the coastal plain to the west of them, about 140 miles northwest of the point where the Mexican border reaches the ocean. The business center[2] is some 18 miles inland while the city limits include three sections of ocean beach and reach up into the first ranges of mountains.

Thus, the section is protected by the mountains and tempered by the ocean in a latitude near enough to the tropics to give it the charm of the Mediterranean type of climate with its stimulating daily change of weather, few temperature extremes, delightfully warm dry summers, and moderate winters with about 15 inches of rainfall.

[1] Jour. Geog., Vol. XXVI, p. 32-6.

[2] The business center of Los Angeles stands at 118° 15″ W and 34° 3″ N. This is on the meridian of central Nevada and Easter Island and comparable in latitude with Atlanta, Georgia; Fez, Morocco; Jerusalem; and Osaka, Japan.

HISTORICAL SIGNIFICANCE OF SITE

This city was founded by the Spanish soldier, Felipe de Nevé, on the Day of Our Lady, The Queen of the Angeles, September 4, 1781; hence named, "La Puebla de la Nuestra Señora la Reina de Los Angeles," later shortened to "Los Angeles."[3]

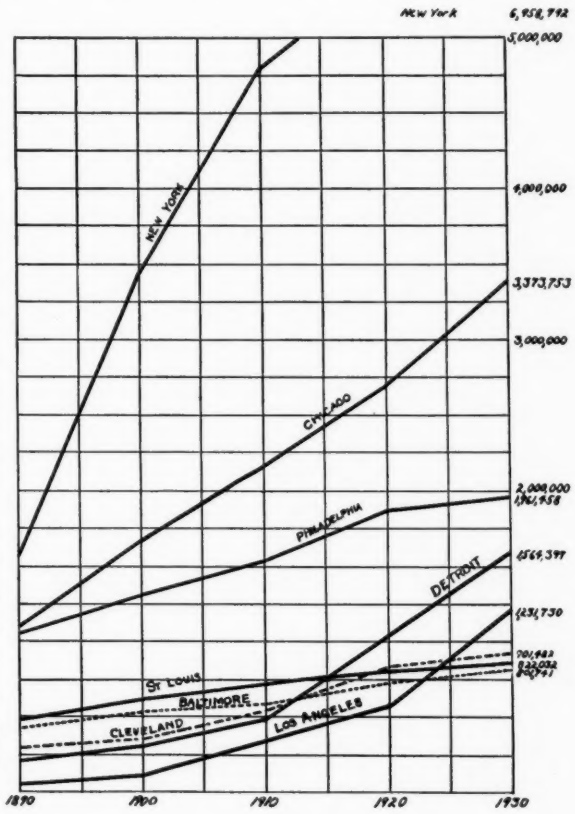

FIG. 1. Growth of eight largest cities of the United States

The first establishment was a presidio town where goods were transferred from one pack train to another. On that site the various trails converged, leading to the passes in the San Gabriel Mountains and to the coastal valleys to the Pacific. This site was close to the foothills which furnished fair grazing areas for stock, and close to the river flat where water was available for irrigation, and spring water for drinking purposes. These natural advantages being greater than those of other nearby localities made it possible for the presidio town, altho far from the capital at Monterey, to become the most important city of Southern California during both the Spanish and Mexican régimes. As long as trade was conducted largely along north and south lines, the trails leading east were of little significance. The gold rush

[3] The preferred pronunciation is "lôs ăn'-gĕl-ĕs (lōs an'-jel-es);" "lōs ăn'glĕs, (lōs an'-gles)" also accepted. Authority—Correspondence with the several universities of the district, with the Geographic Board of the United States, with the University of Chicago and observation of usage over a long period.

in 1849 to the Sacramento Valley changed this, however, and shifted interest to east-west routes. Then the site of Los Angeles became of utmost significance for it became the focus for roads east which crossed the Cordilleras thru the lowest passes south of the Columbia River.

SOME FACTORS THAT HELP EXPLAIN ITS MODERN INDUSTRALISM

The lack of an adequate water supply was once considered a factor limiting the city's growth. Being in a semiarid climate, a water supply for millions of people was not to be had without the completion of a project involving major engineering problems. The greatest of these was the building of the Owens River aqueduct 240 miles long, which brings in enough water from the high Sierra Nevada Mountains to supplement the local water supply until it is sufficient for the needs of between three and four million people. The cost of this project is being offset in part by the sale of power generated by this water at points where it makes the steepest descents to the city. A maximum load of 143,500 horse power of electrical energy is thus developed.[4] This is being increased as the capacity of the aqueduct is increased and the sale of

FIG. 2. The usual streams of traffic up Broadway, the principal downtown street, looking north of Seventh

[4] Three 16,000 H.P., one 18,000 H.P., and one 32,500 H.P. Twin Doble-Pelton generators in Plant No. 1 and two 22,500 H.P. turbines in Plant No. 2.

this power and water is reimbursing the city government for the cost of construction and operation of the system. For this reason it is possible for the city to have a cheaper rate in its power and water than most cities have.[5]

If the rapid growth of the city continues, greater water supplies will be needed and plans are under way for an aqueduct about the same length as the Owens River aqueduct, but from the Colorado River where there is a sufficient supply for future needs.

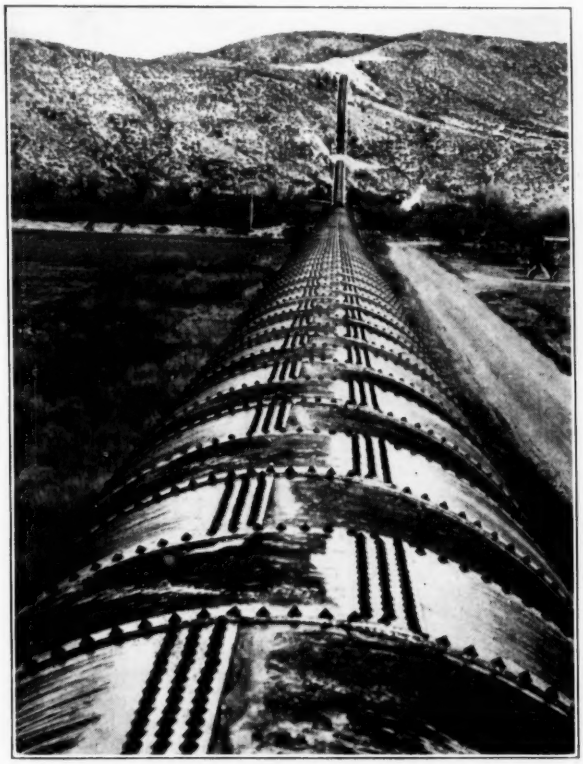

FIG. 3. Section of Owens River Aqueduct, eleven feet in diameter

Larger quantities of additional hydroelectric energy are produced in the vicinity by private corporations at competitive prices. To these supplies is added cheap oil fuel, produced and refined locally. At present coal is little used altho there are large deposits of high grade coking coal in southern Utah in territory for which Los Angeles is the nearest seaport. Like the excellent iron deposits of that same section and those of the Mojave Desert east of Los Angeles, they await future needs and promise much for the city when they are exploited. In the meantime the absence of coal burning factories makes the city far

[5] Power rates are as follows: Domestic First 35 K.W.H. at 4.8 cents, next 140 KW.H. at 2.5 cents, all over 175 K.W.H. at 2 cents; Industrial rates from 4.3 cents per K.W.H. for the first block to 0.4 cents quantity rate with discounts for off hour use. Water rates are as follows: Domestic minimum $1 per month up to 1 inch meters, and $1 per inch on larger. Commercial First 10,000 cu. ft. at 13 cents per 100 cu. ft., next 40,000 at 11 cents, next 50,000 at 9 cents, and all over 100,000 at 7 cents. Special uses down to 1.8 cents per 100 cu. ft.

less smoky and dirty than many much smaller manufacturing centers.

An ample labor supply has become available due to a combination of circumstances. The beauty of the setting of the city, the attractiveness of the climate, the absence of much smoke, and the already mentioned widespread tendency of peoples to move to milder climates have produced a continual stream of tourists. This

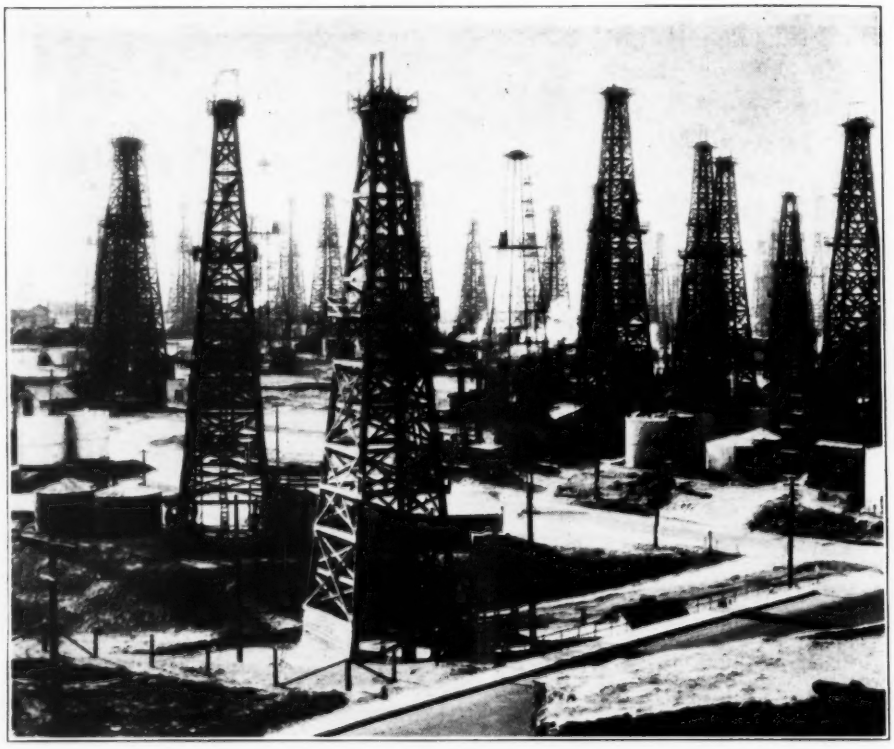

FIG. 4. The Signal Hill oil field in the suburb of Los Angeles

has assumed the proportions of a migration at times when property is selling readily in the middle and eastern sections of North America. These tourists not only spend much money in Southern California but many remain and furnish a constant supply of skilled labor. Unskilled labor is supplied in abundance by Mexicans and descendants of former Mexicans. This labor supply has remained poorly organized and the open shop policy has attracted numerous industries from sections where union activities have been extreme.

THE CHIEF INDUSTRIES

The growth of the principal industries has been more closely and more simply related to natural conditions than is sometimes the case in a less isolated large center. The large production of oil in and around the city has combined with the circumstances conducive to an unusually great per capita use of automobiles to stimulate the refining industry.

The ample fuel supply and the demand for pipe, drill, derrick, pump, tank, and other oil shipping and storage equipment has aided a group of industries classed under the term of metal industries, the chief of which is the steel industry. The ten plants in the city and its close vicinity make steel chiefly from scrap and pig iron shipped from the east by steamer thru Panama. The vast use of patented products forces the western population to buy a considerable percentage of its metal products from eastern firms, in spite of shipping costs. This has discouraged any attempt to build up a blast furnace industry at Los Angeles. Some pig iron is coming from Utah, however.

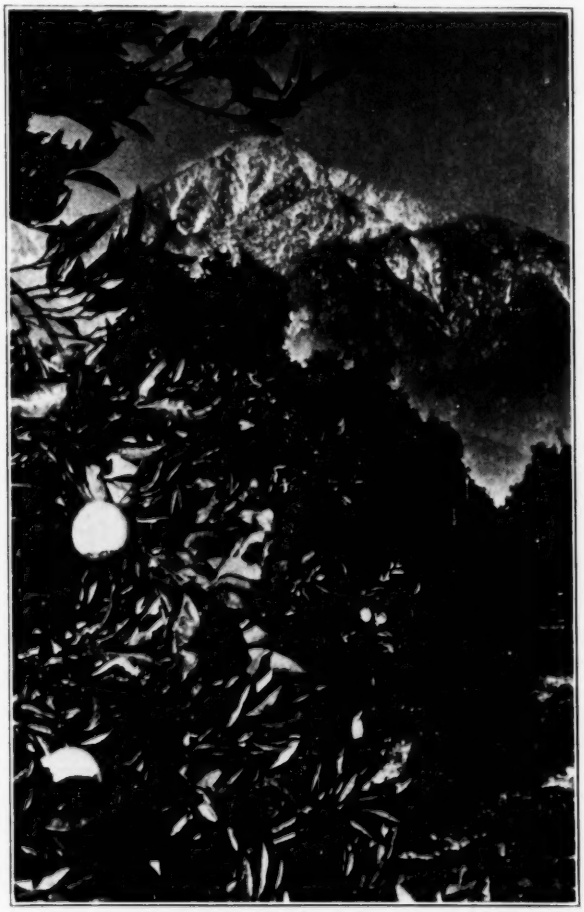

FIG. 5. An irrigated orange grove with snow-capped mountains in the background, a typical "rural" scene in Los Angeles County

As might be expected from its origin the steel industry of the section is engaged chiefly in making a variety of products in local

demand. These still include such things as pipe and special castings for oil production and irrigation machinery but to these have also been added all manner of iron and other metal products such as concrete reinforcements, bridge and building steel fabric, and a multitude of special automobile and airplane parts.

The motion picture industry had an excellent chance to grow in Los Angeles because of the sunny climate and surface features which combined to reduce the loss of time in production, to reduce the need of artificial lighting, to permit more outdoor work, to require less expensive construction, and to make possible the easy duplication of scenes from any section of the world right in the vicinity of the studios.

These three industries, the refining of oil, the manufacture of steel with its related metal industries, and the production of motion pictures are the leading industrial activities of Los Angeles. The products of the refineries were valued at 220 millions in 1929. This is less than one-fourth of the total value of the products of the factories of the county which passed the billion dollar mark in 1927. This fact shows that the industrial development of the city and its vicinity has not been dependent upon any one or few industries but upon a considerable variety of important ones. The important industries and their annual outputs are as follows, estimated totals for Los Angeles County, 1929.

Principal Industries	*No. Industrial Plants*	*Est. Total Value of Output in 1929*
Oil Refining	35	$ 220,000,000
Metal Products	800	200,000,000
Motion Pictures	78	100,000,000
Rubber Tires, etc.	11	60,000,000
Wearing Apparel	330	40,000,000
Printing and Publishing	500	60,000,000
Meat Packing	31	60,000,000
Furniture	110	30,000,000
Fish Canning	16	15,847,000
Textiles	46	12,000,000
Clay Products	68	12,350,000
Glass	29	8,000,000
Aircraft & Allied Industries	24	5,500,000
TOTAL INDUSTRIES	4,215	$1,096,000,000

The development of these varied manufactures would have been handicapped had not the section been favored with advantages for the development of land and sea transportation and with large

supplies of raw materials. The section has both. Agriculturally it is surrounded by the richest of irrigated areas and it is the metropolis of the largest reclamation projects of the western hemisphere. One might expect the agricultural production about Los Angeles to be limited because of the vast areas of waste land thruout the southwest but the large areas of irrigated land, particularly those in the tropical desert, are so productive that instead of having a shortage of food the section helps feed the world.

LOS ANGELES HARBOR

The large industrial progress of the city requires vast marketing. This called for the development of a port. For a long time the natural advantages of the nearest harbor, San Pedro, failed to gain recognition. Now, the port has been conditioned in the light of modern engineering and its commerce has increased phenomenally. An average of over 23 ships a day connect it with the vast markets of the world.[6] The principal imports are crude rubber, coffee, newsprint paper, iron and steel manufactures, fish, lumber, bananas, oil cake meal, sugar, and copra. The principal exports include cotton, petroleum products, borax, infusorial earth, oil well machinery, fresh fruits, and rubber tires.

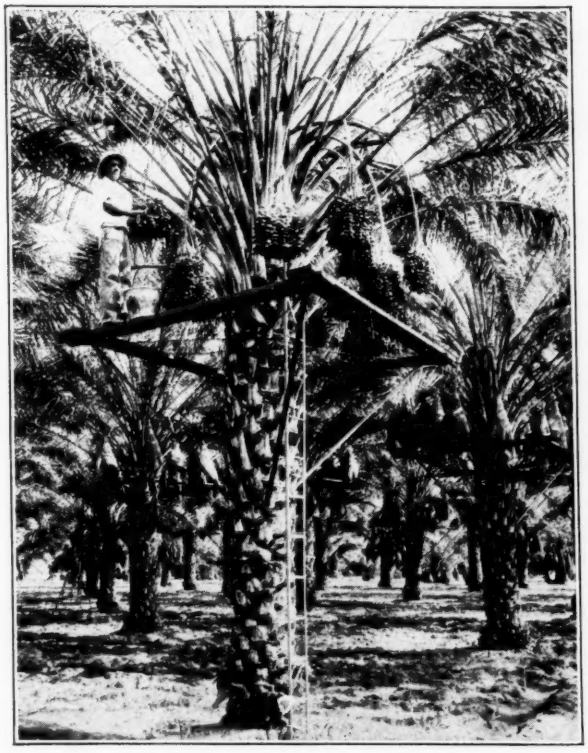

FIG. 6. Harvesting dates in the Colorado Desert, east of Los Angeles

[6] Annual Report, Board of Harbor Commissioners, Los Angeles, ending June 20, 1930.

CHECKERBOARD CITY LIMITS

Great in material advantage, Los Angeles has escaped many of the evils of a great commercial and industrial center. Having started as an inland town the port and the retail center are separated by about twenty miles and this has helped to cause the city to be scattered over a large area.

The large use of hydroelectric power and small motor unit operation of the manufacturing plants has lessened the smoke evil. The topography of the setting has naturally segregated the fine residence sections and helped to scatter them attractively. The influence of the motion picture industry is building a great music and art center.

FIG. 7. Venice, a readily accessible ocean beach, within the city limits

Barring this last point, the growth of Los Angeles has been not unlike that of other great cities except that it has been, perhaps, faster. This very speed of its coming into the big city class, together with the very attractiveness of the setting of the city has fostered some neglect of civic beautification. The spread of the city over a vast area, that from Newhall to San Pedro and Topango to the San Gabriel, has made park, boulevard, and street work a much larger and more expensive problem than it is in a more compact city. This great spread of area, perhaps coupled with the semidesert climate at the foot of precipitous mountains, makes Los Angeles quite different from other cities. The city limits do not include nearly all of this area and the irregular

process of annexation in answer to the desires of real estate subdividers, water needs of suburbs, control of aqueduct, sewer, harbor, and beach, have formed a checkerboard city limits which does not entirely coincide with the real city. Large, thinly populated areas, far from the heart of the city, are in the corporate limits, such as parts of San Fernando Valley where the aqueduct enters; and large areas of thickly settled city, close in, are separate muni-

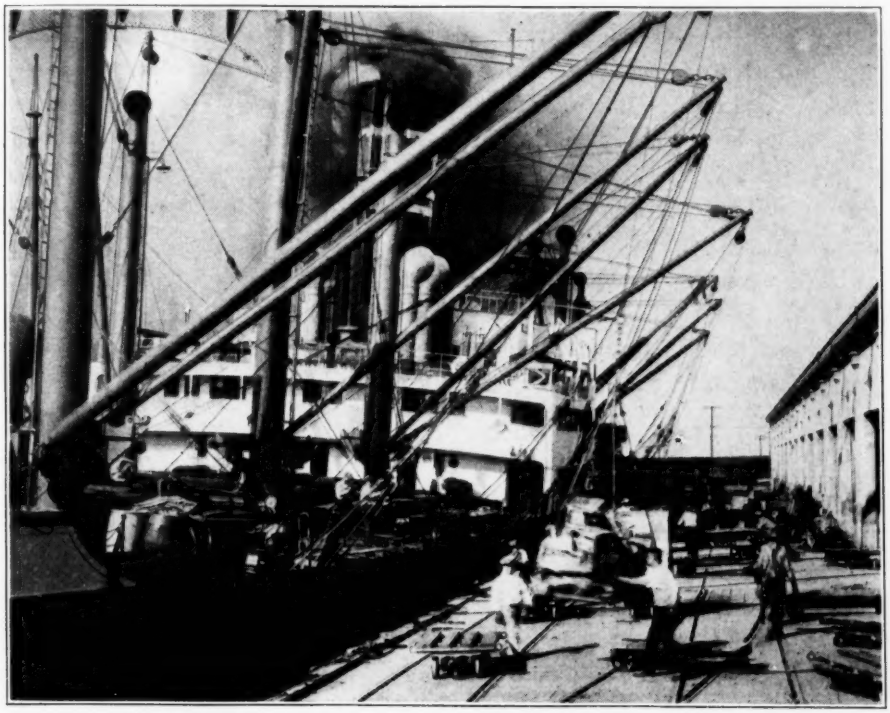

FIG. 8. Dock scene at San Pedro, Los Angeles Harbor, within the city limits

cipalities as Pasadena and Glendale; or unorganized county as the thickly built up section just east of the city limits. The area of the city[7] is continually changing and may be expected to result in one city covering an area of about a thousand square miles between the mountains, the ocean, and the San Gabriel River. However, several of the large suburbs, such as Pasadena, Long Beach and Glendale, will long hold out as separate entities due to strong individual civic pride.

[7] Pasadena, population 75,875; Glendale, population 62,607; Long Beach, 141,390. All census figures given are from the preliminary announcements by the Federal Census supervisors of the 1930 U. S. Census.

The actual area of the corporate limits of Los Angeles, April 17, 1930, was 441.67 square miles. Thus it is the largest city in area in the United States. One is likely to think that it has been able to gain fifth place more by annexation than by real growth. If this were the case the whole consideration of Los Angeles as the fifth city of the United States would be erroneous. That it is not the case, the following facts show. The area of the city increased 21 per cent during the census decade, 1920 to 1930. The population increased 113 per cent from 576,673 in 1920 to 1,231,830 in 1930. If this increase were due in any great degree to the annexation, the rate of increase of the surrounding areas would be lessened. Hence, it is interesting and enlightening to compare with this 113 per cent increase of the city, that of the metropolitan area set up by the United States government in 1920 and the same area in 1930, an increase of 140 per cent from 879,008 in 1920 to 2,115,323 in 1930, and that of Los Angeles County 134 per cent from 936,455 in 1920 to 2,199,657 in 1930. This county population is distributed over approximately 1,800 square miles, for the remainder of the 4,115 square miles of the county is largely mountains and desert. The nearest rival population center is that around San Francisco where in the 6,979 square miles of the nine counties of that section, the census counted 1,567,987 persons. Altho the nearest large population area, it is almost 500 miles to the northwest of Los Angeles, hence not a competitive area. The only important city southward is San Diego, with but 147,897 people. Washington (population 1,557,540) is the only western state outside of California that has a population as large as that of Los Angeles city proper.

CONCLUSION

Altho the growth of Los Angeles has been so rapid in recent times as to arouse the skepticism of those at a distance, the curve of population growth has not apparently begun to droop. The regular factors which tend to build a large city have not yet spent all their influence. Such vital needs as water supply are being enlarged to meet the requirements of 12,000,000 people. No known factor fostering the growth of a large city is being neglected and the beauty and attractiveness of the place cause people to take advantage of these factors more rapidly than they would in a less attractive location.

Thus, like other great cities, this fifth city of the United States

has developed by the regular rules of city growth but the beauty and unusual nature of its surroundings, its recent rapid growth, and its spread over an unusually large area give it a pleasing differentiation. This thrill of the rush, noise and power of a rapidly growing city, with suburban living conditions enhanced by the charm of the sea, the desert and the mountains, set Los Angeles apart as a city unlike any other city in the world.

AN ADVENTURE IN CARTOGRAPHY

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Like all students of things geographic, I have always had to put data on maps of the world, and I have found all world-maps too small. I always want the continents larger, and their shape is not like continent shapes on the globe. I want my continents of truer, better shape.

The six-six map shown in Fig. 2 seems to meet this need. On the same width of book page as the familiar world-in-hemispheres map it has larger continents and their shape is very close to that of the continents on the globe. Australia and South America show the improvement in size and shape especially well.

To compare the two maps in use I have sketched on each the *Intemperate Regions,* where summer is too hot and winter too cold. The reader will find all details more legible, easier to make out on the new map. The places of the Intemperate Weather are black on both maps, intemperate, painful but stimulating; our weather, the weather of southern Spaniards, Italians, Hungarians, Bulgarians, Greeks, Turks, Manchurians and Japanese; not the weather of northern Europe, not the weather of Englishmen. Their weather lies on the cooler side of the black, nearer the poles and misses the extreme heat of summer at least. So does the weather of their Canadian descendants, and the Australians, for Australia's Intemperate Weather is a bit aside from the parts of the continent where Australians dwell, along the southeastern coasts. Somewhat so too in South Africa, English blood may predominate to the south of the Intemperate Belt. That is a consideration that must be had in mind the world over—that in many countries the people are bunched in one portion of their territories. They are in our coun-

try. About half of it lies west of the 100th meridian, half of our territory, that is, but not ten per cent of our people live there, altho some of these convey an impression of greater numbers by constant advertising. The Argentine Intemperate Zone does not quite touch their million city, Buenos Aires, and most of the Argentines live a little on the warm side of it, where extremes of cold are wholly unusual, while the Australians and New Zealanders live rather on the cold side of their Intemperate Zone. It is a char-

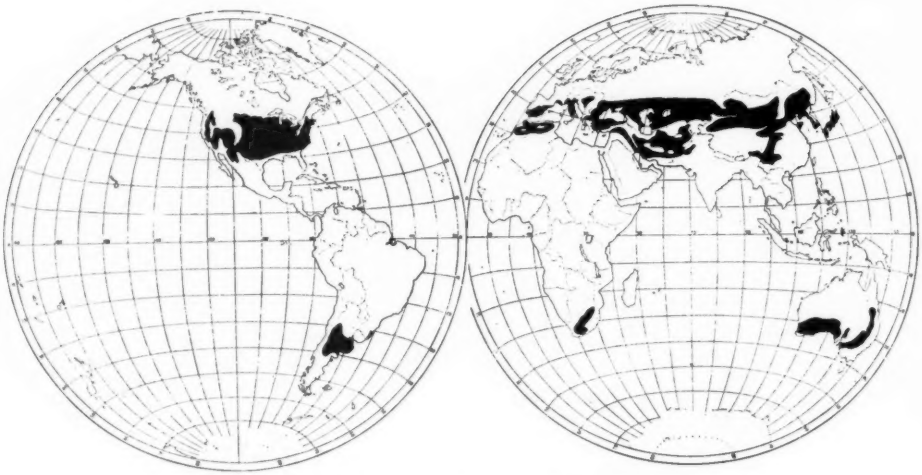

FIG. 1. Intemperate Zones on Hemispheres

acteristic difference of English weather from that of most of the United States that so much of ours is intemperate. We have on our northern and southern borders samples of weather more like the English and the Argentine respectively.

This zone has been delineated in black from elaborate modern instrumental studies and has somewhat complicated outlines. The Mediterranean ancients conceived it as of far simpler form and miscalled it Temperate Zone, as between a too cold north and a too hot south, of which they had attained deep conviction but little knowledge. They had of course no thermometers, no steady records of weather of any sort, where we have literally millions of recorded observations of manifold facts of weather. They conceived of the excessive temperatures north and south of them as destructive of life—the Sahara as too hot for life and the north of Russia as too cold, where we know the Sahara to be in defect of water more than coolness, its water holes being very well peopled, and its ex-

tremes of heat and cold resulting in part from its aridity, while men, women and children are very happy at Winnipeg at temperatures the ancient Greeks have counted unendurable.

Nor were they aware that there do exist in the world considerable areas of really temperate climate where no month averages over 68° F. nor any under 50°, where extreme temperatures are entirely exceptional.

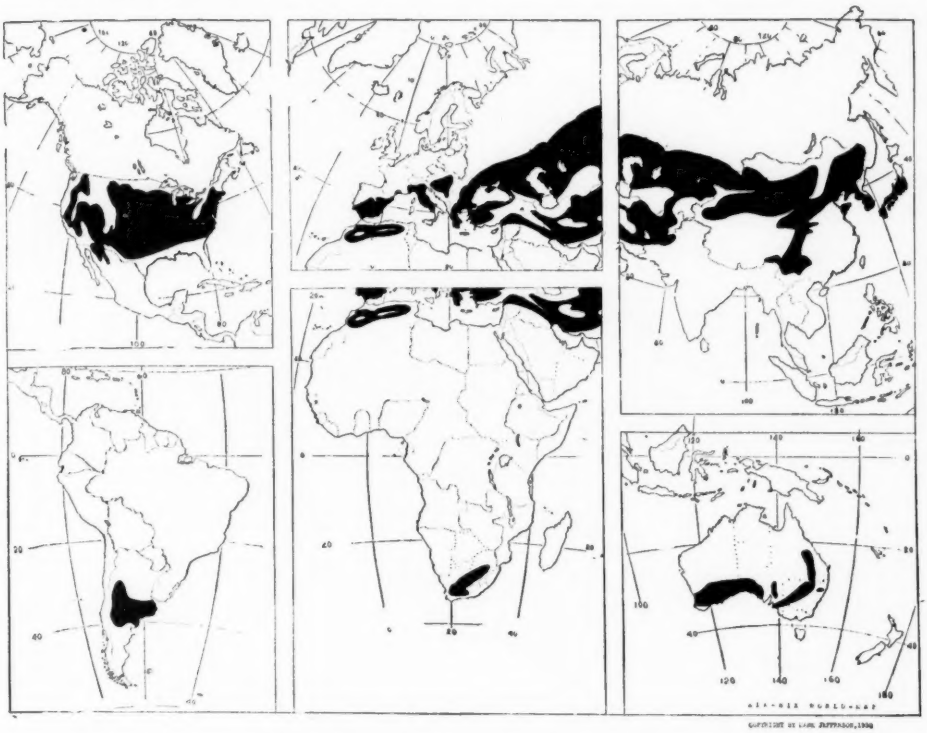

FIG. 2. Intemperate Zones on Six-Six Map

The twisted shape of Australia and South America on the hemispheres map is unavoidable, since we have to represent the marginal meshes in each belt of latitude as different from the central ones in order to get the rounding hemisphere down on flat paper. Take the belt from 30° to 40° S. which contains most of the intemperate regions of the southern hemisphere. Near the middle of the map these meshes are nearly square, but at the right and left margins they are nearly twice as high as they are wide. The continents are out of shape in exactly the same proportion. Our six-six map has very slight distortion of that sort.

The hemispheres attempt to show us half the globe at a glance, the whole globe in two looks. It is not possible, as you would see if you tried it with a globe. We cannot compass a hemisphere in one glance. Its rounding shape forbids. We can make out its central part, the part facing our eye, but the margins we cannot see at all well. They do not face our eyes. Nor do we need to make out so much. Most questions that take us to a globe or map concern a continent or a part of a continent. If we use a globe we bring the place at interest around in front of our eye. About a sixth of the globe we may grasp nicely in one glance, the central third of the hemisphere. That omits two-thirds as facing away from the eye and poorly visible. We cover the world then in six glimpses, each containing a sixth of the whole and including a continent, instead of a world in two halves, which is not practicable. I call it a *six-six* map as easier to say than six-sixths. Our Australia is three quarters of an inch wide, while the hemispheres on the same paper make it less than half an inch. Hemispheres one on each page would give us continents a very little larger than we get all-on-one on the six-six map.

There is so much ocean in the world! We cannot afford to include so much water in our maps when they are concerned with land affairs only, and these are of course most affairs since man is in the main terrestial in his habits. There are occasional maps like the distribution of coral islands for which the six-six map is not suitable.

THE PARANA WAY TO THE IGUAZU FALLS

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THE *Lambare* DEPARTS FOR THE NORTH

Thru the fog that hung over Buenos Aires' gray streets one chilly morning, we could see anchored by the wharves along the Rio de la Plata the small, compactly built river steamer, *Lambare.* It was about to depart for northern Argentina and Paraguay by way of the Plata and Parana rivers and would connect with steamers going up the Alto Parana as far as Brazil. The whistle was blowing, baggage was being hauled on board and passengers were parting from families and friends. Amid this confusion, we boarded the steamer and stowed our bags in the tiny stateroom which was to be ours.

From the top deck, which was crowded with new automobiles lately from Detroit, we saw the *Lambare* safely piloted away from the wharf and the many boats which were moving north and south on the estuary. Far to the east were the unseen shores of Uruguay. "The river won't appear this wide all day," said an Englishman, "for we'll pass among the islands at the mouths of the Uruguay and Parana rivers to-day." To the west the low lying Argentine bank was being lapped by the muddy water of the Plata. On the yellow and brown grass of the plains beyond, cattle were feeding. The flat horizon was broken only occasionally by an estancia or ranch house and a few leafless trees.

That evening we shared the dinner table with two Paraguayan couples who amused themselves by teaching us how to ask for food and service in Spanish. Delicious Paraguayan oranges were served after the sixth course. We learned to eat them in the mode of the Argentine which is to hold the orange firmly in place with a fork, quarter it and remove the skin with a small knife.

IN THE LOWER PARANA VALLEY

The huge packing house or frigorifico of Swift and Company was the first object we saw the next morning near the town of Rosario. This city's low, flat-faced buildings seemed to spread out over a great deal of space upon a slight bluff above the Parana River about 270 miles north from Buenos Aires. Farther north

from Rosario, we saw more cattle grazing on estancias which would supply the packing houses of Buenos Aires and Rosario.

That evening we reached Parana, a town about 375 miles north of Buenos Aires. Here about a hundred well dressed people gathered on the shore to watch the exchange of goods and passengers. Most of the automobiles on the top deck were unloaded by huge German-built cranes. In a short time all the cars were off, with the exception of two bound for Paraguay. A few boxes of

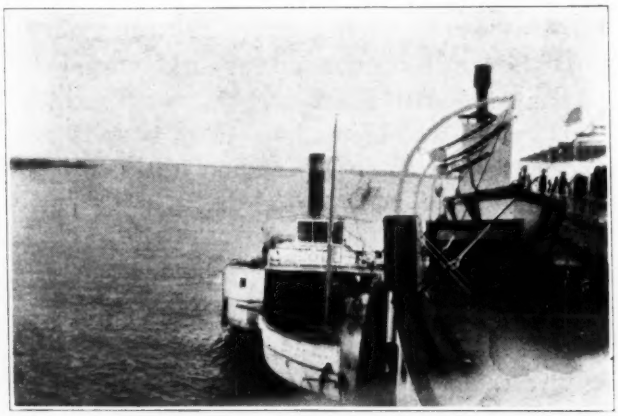

FIG. 1. Pilot boat leading our ship out of the Buenos Aires harbor

vegetables were loaded marked for delivery in Corrientes. This town of Parana does a large trade with the river to and from its hinterland.

The river is difficult to navigate above Parana and its sister city, Santa Fe, across on the west shore. The river has a marked annual flood, so that suitable landing places on its low banks are hard to find. The river's channel is likely to change, owing to the rapidity with which sand banks are formed, swept away, and reformed again.

Such inspiring and quieting days as we had on that boat are not to be forgotten. There was nothing to disturb the peace and quiet of the flat Argentine land. The weather had little in common with that we had experienced a week ago. The air had grown warmer. The sky was as clear a blue as can be expected in a southern winter. The breezes were softer and milder. We noticed that the few trees we saw were no longer bare but bore cheerful green foliage. Tall gracefully swaying pampas grass was on the shore. This three day

trip north of Buenos Aires recalled the warm winter days of Rio de Janeiro or Florida.

Saturday closed with one of the most beautiful sunsets I have ever seen. The sun, a vivid red ball, was setting in a flaming burnt orange, gold and yellow sky. These colors darkened to shades of rose as the sun sank lower. The glowing sky was separated by a narrow blue-green band of foliage from the wide expanse of the river, which rippled daintily as the steamer moved northward. The

FIG. 2. The rat-tat-tat of Corrientes' drum corps

ripples, catching the spirit of the sunset, reflected the orange from the sky and the blue-green shades of descending night. Along the near eastern shore, where the pampas grasses bent gracefully with the cool evening breezes, a large bird, vivid as an oriole, flew along the shore. Here a group of cranes were settling down for their nightly rest in a clump of willows. So beautiful was the scene that we could only remain silent with awe. Night shades gradually dulled these colors. Brilliant stars, glorying in a blue-black night, brought a new beauty to us. Most brilliant of all were the four bright stars of the Southern Cross.

CELEBRATING INDEPENDENCE DAY IN CORRIENTES

Sunday we reached the harbor of Corrientes, which is just south of the junction of the Paraguay and Parana rivers. We were told that the steamer, *Iguazu,* which was to convey us up the Alto Parana to Posadas, would take us on board in midstream. The two boats were securely tied together and a small section of railing removed

from each which enabled us to step quickly and safely from the *Lambare* to our new steamer the *Iguazu*. As our new steamer would not leave until the next morning, we were free to spend the day in Corrientes. A young Corrientino rowed us ashore. All his young energy was required to take us there safely as the river current was very strong.

Corrientes, on that Sunday morning a hot and dusty town, abounded in life. The Argentines were celebrating their Independ-

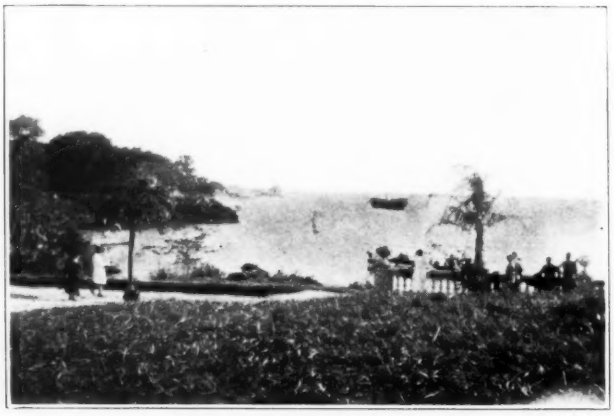

FIG. 3. Park and waterfront of Corrientes

ence Day which is July 9. We had not walked far over the narrow sidewalks of the cobblestoned streets until we heard the rat-tat-tat of a drum corps. We arrived in the next street in time to see several troops of Argentine Boy Scouts on parade to the river. We heard the word "regata" pass thru the crowd. We concluded that the regatta was part of the Argentine Independence Day Celebration. We followed the scouts to a pretty park which was located on a promontory in the river. Argentines of every kind were here, rich, poor, white, Indian and black. Some were dressed very fashionably, while others, not using quite as much taste, had assembled the brightest and best clothes that they had. Cars of America's finest make were being driven and parked along the drives. Most of the celebrants walked or used the small open-air street car which ran by the park gates.

At the top of the promontory was a white stone pergola which sheltered a lovely marble copy of the Venus de Milo. A white stone balustrade held back the people assembled near the base of the hill

to see the races. The regatta began. The slender shell-like boats, propelled by the competing rowing crews, glided swiftly to the goal a short distance down stream. The races were a success as far as we were concerned for they furnished us an opportunity to see the native Argentines in their holiday best.

On our way back to the wharf we had glimpses thru door-ways of homes, whose neatly tiled entrances lead to interior gardens or patios where potted plants were arranged on gayly tiled floors.

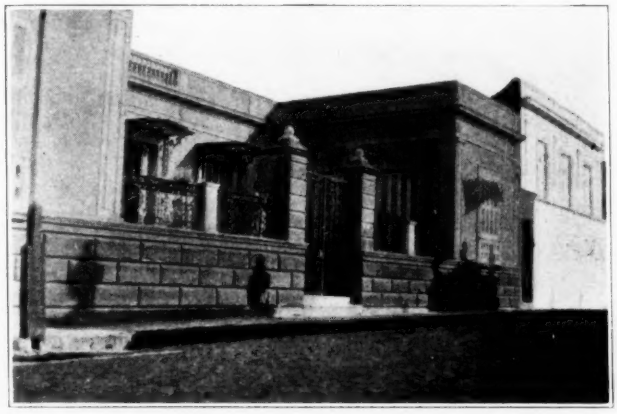

FIG. 4. Some Argentine homes at Corrientes

These inner patios seemed to be the most attractive part of the houses. Certainly the flat-faced one- and two-storied exteriors, with their shuttered iron barred windows, gave little indication of inward beauties.

UP THE ALTO PARANA VALLEY

The next morning dawned with much noise and bustle on the Corrientes' wharf. The steamer *Iguazu* was departing. Some of the natives, waving "adiós" to their friends on board, were Indians with brightly colored kerchiefs about their necks. Others were fine looking Argentines whose friends were among the seventeen first class passengers on board.

Up the Alto Parana the captain, at the request of the passengers, stopped the boat for thirty minutes at Itati. Here was a bright, clean and picturesque town. It was said that an interesting old church was here. The inhabitants of Itati were mostly high-cheeked, brown-skinned, bare-footed Indians dressed in gay red, blue and pink clothes. These looked entirely appropriate in the

bright sunlight. While the people watched our progress thru the town, they lounged on the wharf or leaned against the low doorways of their humble homes. No evident business was being carried on except the sale of oranges at four cents a dozen. The one paved street curved to the left from the wharf and crossed a wide, sunny, open space to the fine twin-towered church of white stucco. Inside was a huge old cross, whose wooden timbers were said to have been used in an older church which had stood on this site. A chapel of more recent build was to the rear of the church.

FIG. 5. Indian homes at Itati

The stolidity of the natives was fully tested a half hour later when our boat, urged by a fine river breeze, grounded on the sandy banks below the wharf. The natives, having seen other boats do likewise, remained calm. One house wife, doing her washing on the river bank, stopped only when the boat drifted within twenty-five feet of her. The boat was removed from the sand by a simple process. Several sailors rowed out amid stream, where they dropped the heavy anchor. The *Iguazu* pulled out to it mechanically.

The country we were now passing thru was subtropically forested. Here and there in the tall bamboo plants which grew along the shore, were clumps of leaves that we thought were nests but which a fellow passenger recognized as mistletoe. Above the forest turkey buzzards were flying low. The river was very wide and its water a clear and limped blue. The river breeze was delightfully cool and the sunlight glorious.

That evening a professor from Buenos Aires showed us how

to make maté, the Argentine national drink, which is prepared from the leaves of the yerba-maté plant. "Eighty percent of the rural people drink this," he said, "and twenty percent of the urban dwellers do." He barely filled half the maté cup, which is a hollow gourd, with maté leaves. Then he allowed tepid water to remain on it two minutes. This he removed and replaced with water which had been heated to the boiling point. The first draught of the maté or tea sipped thru the bombilla, a metal sipper, is bitter. One does not drink that. More water is added which weakens the flavor and

FIG. 6. Church and paved street, Itati

makes the second and third sips more satisfactory to the taste. Maté is delicious and is said to be healthful.

Before reaching Posadas the next day, we passed among large rocky islands. The rapids here hinder navigation so shipping has always been difficult. The boats, used to ship between Corrientes and Posadas on the Alto Parana, are of smaller type than those used on the Parana and Paraguay rivers. A precise survey of the entire river has been made by the Ministry of Public Works in Argentina and the river has been carefully mapped for navigation.

SKIRTING THE PROVINCE OF MISSIONES

We reached Posadas in the afternoon. It is located in the southern end of the province of Missiones. This province extends as a peninsula northeastward between Brazil and Paraguay. Tho Posadas is not an impressive town, it is an important center for ex-

porting maté and for the railroad which connects it with Ascuncion and Buenos Aires. The trains ferry the river from Posadas to Encarnacion, Paraguay, as the river is very wide and there is no bridge.

At Posadas, we boarded the river boat, *Ascuncion,* which left the next morning for Puerto Aguirre, the river port near the Iguazu Falls. A few miles above Posadas are forested hills which are a southern extension of the Brazilian plateau. The river here begins

FIG. 7. Subtropical forested bank of Alto Parana

to narrow noticeably and to deepen and is dotted with numerous islands.

On either shore gray trunks of trees stand out occasionally against the dark background of vegetation. Here silvery leaves gleam brightly against the deep shadows of other foliage. Bright oranges load down wild orange trees planted there years ago by the mission fathers before their explusion from this country by jealous invaders. In some clearings are low bamboo huts sheltered by huge clumps of banana trees. Whole hillsides here and there are planted with these trees. On the hilltops, occasionally, one can see the home of a yerba-maté planter. Some of these planters were aboard our boat and were of Swiss, French, or German birth. None of these plantations boasted a wharf of sufficient size to dock a boat, so the passengers were rowed ashore in a small boat. This took but a few minutes, for the blue denimed sailors were very skillful in lowering and hoisting the row boats from the pulleys on the side of the steamer.

The second morning after leaving Posadas we found that a heavy fog had enveloped the river during the night and obscured the forest, making it necessary to tie the boat to a tree which stood upon a high, rocky bank. Up stream the thick fog hung heavily as a drooping veil. The damp, misty atmosphere gradually disappeared as the sun rose higher in the heavens and we were able to continue our journey.

The shores of Paraguay and Argentina seemed to press in upon

FIG. 8. Bamboo huts along Alto Parana

the river. Here we could see the forest covered hills sloping directly into the river. They were high enough to prevent the sun from reaching the valley at an early hour. The lower slopes of the hills were overgrown with tall, gracefully bending bamboo and ferns. The air was enlivened with the cries of the wild life in the forest. Toucans flashed yellow beaks and gay plumage; vultures and aigrettes were also sighted. All morning we scrutinized the banks for crocodiles and the trees for parrots but saw none.

In the afternoon our boat turned into the Iguazu River which flows from the east into the Parana. The last miles of the Iguazu mark part of the boundary of southwestern Brazil and northeastern Argentina. To the west across the Parana is the eastern border of Paraguay. Thus the boundaries of three countries are visible at one time. It was but a short distance up the Iguazu River to Puerto Aguirre where five or six houses and one small hotel are assembled on a high bluff above the river. Only a gangplank was needed to descend from the boat to the foot of the cliff nearby.

FIG. 9. Ruins of the missions at San Ignacio

FIG. 10. Gently sloping grassland dotted with grazing cattle, Missiones, Argentina

FIG. 11. Iguazu Falls. Courtesy of the Pan-American Union

AT THE IGUAZU FALLS

At the cliff top we found a bus which was to take us to the Hotel Iguazu, seventeen miles up the river thru the forest. The road was very rough in places, altho it had been made at great expense since the forest had had to be cleared away and the roadway built up in many low spots. On either side lay hewn and burnt logs. The living trees were hung with vines and creepers with orchids growing in profusion on trunks and limbs. We became conscious of a dull roar as we came up a last hill. The hilltop had been cleared of trees, so we had an unobstructed view over its crest to the wide curving precipice across which poured the Iguazu River. A mist ascended and descended at the deepest portion of the gorge.

That night it rained and even by the next morning the weather had not cleared. This moist condition of the atmosphere and land, ever present in this section of the country, is a natural breeding place for numerous varieties of insects. We found it necessary to arm ourselves with thick soled shoes, paper lined stockings, raincoats, gloves and mosquito netting head pieces. From the hotel to the falls was a wide clearing with a few trees clustered with orchids and other parasitic growths. This clearing we crossed by following wet and muddy paths bringing us to a rudely constructed bridge which planked a far flung arm of the Iguazu River. Thru the forest beyond the bridge we passed until we came to the end of the gorge. We found then that we were really on an island precipice formed by two branches of the Iguazu which rushed madly by on either side of us to the great abyss beyond. This gorge extended in a huge half circle for two miles toward the east and north from where we stood. The Iguazu was rushing over the long extent of the precipice in a series of twenty or more cataracts, the land between forming numerous small islands similar to the one on which we stood. Wherever they could get a foothold for growth, green forests framed the falls in foliage. Here was power set in a naturally beautiful background. Below in the gorge gathered the water of the cataracts in one seething, white-capped misty mass. The magnificent fall of the water into the gorge was broken midway by a broad step of resistant rock upon which the water plunged before making its final descent. The Iguazu Falls are 210 feet high. Niagara is 167 feet in height. The Iguazu Falls rank next to the Victoria Falls in South Africa as the world's greatest cataracts.

FIG. 11. Iguazu Falls. Courtesy of the Pan-American Union

We retraced our tracks over the bridge and skirted the precipice to a steep and slippery path which led downward thru a dripping growth of trees and underbrush. The beauty of these trees was as elusive as a Corot landscape which has its inspiration in the forests of France. Lovely green mosses grew on every tree trunk, on the ground and on boulders. Ferns, begonias, sarsaparilla, sour grass and wandering jew were some of the plants which we could readily recognize in the profusion about us. Parasites hung from the trees. Butterflies flitted here and there. The soil was a rich red similar to that of the Brazilian coffee country. We found ourselves at length upon the broad, heavily-forested lower stratas of rock which extended from the steep walls of the gorge. This small plateau we traversed for a short distance to the cataract formed by the descent of the stream which we had crossed on the plateau above. The roar formed by this stream's fall deafened us. We crossed several more rude bridges under which the water rushed, and came to another point on the precipice which was heavily overgrown with palms, and other plants. Altho we had descended many feet, we were still high above the gorge. The roar of the falls was even more deafening here. We were opposite the island promontory called the "Devil's Throat" or "Garganta del Diablo" which we had seen from above. Farther along on the precipice we came to a seething whirlpool where the rushing water from the cliff above thundered on the plateau before making its final plunge. The spray rose high and dampened our clothes. The scene awed and fascinated us with its splendor.

Traveling in the Land of the Missions

By Sunday the rain had not stopped. In spite of the rainsoaked road to Puerto Aguirre we did reach our boat in time for the return to Posadas. The trip down stream was a succession of lovely sunny days.

Monday night we saw the lights of Posadas reflected in the dark water of the river. Across the stream in Paraguay was Encarnacion thru which some of our passengers would pass the next day on their way to Ascuncion. We bade our newly made friends "goodbye" for we were to continue our journey to Buenos Aires by train.

The next morning we had a fine car, chauffeur and a Swiss friend take us to the ruins of the missions at San Ignacio, Argentina, which are some miles above Posadas. In spite of the fact that

our machine had to be pulled out of the mud four times that day, the ruins were worth seeing. Beyond the small town of San Ignacio and grouped about a large quadrangular open space, the various ruined walls, composed of mossy green blocks of stones, picturesquely told the number and size of the pretentious buildings which had once formed the San Ignacio missions. On the right of the quadrangle, covering several acres of ground, is the ruin of what had once been a cathedral. Wild orange trees, planted there years ago, bore loads of bright oranges, bitter fruit. In the cathedral and other buildings a forest has grown up. A settlement of several thousand people lived here long ago, ministered and taught by the mission fathers who were later expelled.

Traveling in the province of Missiones, Argentina, is exciting, but never certain, after rains. However, we did return from San Ignacio in time to board our train that night after a long pull thru the mud, up and down hill, over rivers which we forded, or crossed by bridge or ferry. We were followed all the way by an Argentine cattleman in his truck loaded with hides. Every time our car mired, he would gaily put his two helpers to assisting us on our way.

By Rail to Buenos Aires

The biweekly train left Posadas at four in the morning. We were permitted to board it at ten in the evening and secure a well-earned rest. This railroad is managed by an English company. The compartments afforded every convenience and were finished in beautiful highly polished wood and soft leather upholstery. Except that the coaches were made of wood and the gauge of the tracks narrower than those we are used to, this railroad was as fine as our own in America.

As we were now passing Argentine cattle country, much of it controlled by British estancia owners, we met some English-speaking people on the train. We passed thru several large towns, the largest of which was Corcordia on the Uruguay River, opposite Salto, Uruguay. For two days we passed thru gently sloping grassland dotted with herds of grazing cattle and an occasional estancia house. There was a sameness to this country which leaves little to describe.

Thursday morning we awoke to find that our train had been run aboard a ferry boat and was then crossing the Parana River. For five hours we steamed among islands in the Parana before we

reached the docks where the train was run from the ferry to the mainland.

As we came into Buenos Aires, our journey's end, we remembered the day two weeks before when we had thought that the Parana way to the Iguazu Falls would be tiresome after our twenty-day ocean voyage from New York. But the memory of sunsets, of subtropical forests, and the peacefulness of the nights under the brilliantly-starred black skies more than recompensed us for the many days we had passed up the Parana.

GEOGRAPHICAL PUBLICATIONS

Nevin M. Fenneman. **Physiography of Western United States.** 534 pp. including 173 illustrations in the text and a large folded map of the United States in a pocket. McGraw-Hill Book Company, New York, 1931.

For many years all who are professionally engaged in geography and all students of geography have awaited the appearance of a treatise on the regional physiography of the United States. We have naturally looked to Dr. Fenneman for this contribution and we are now deeply indebted to him for the first of two volumes in which he has planned to present all that is well established relative to the physiography of our country. This volume is in itself an outstanding contribution to the literature of geography, and we look forward with keen interest to the appearance of the second volume. When the two volumes have been completed, Dr. Fenneman will have presented to us a monumental piece of work and one that will be absolutely essential to every student who is interested in the geography of the United States.

This volume treats the provinces west of the Central Plains. It begins with the treatment of the Great Plains. That is followed with a presentation of the physiography of the Rocky Mountains. Following a study of the Rocky Mountains comes a study of the Great Intermontane Plateaus. The last portion of the volume is devoted to the physiography of the Pacific coast mountains and lowlands.

Dr. Fenneman frankly states in his preface that this volume is not a textbook. It is, however, a most essential reference work or treatise and it should be used in all advanced courses in the regional physiography of the United States. It is, in the judgment of the reviewer, a most appropriate text for graduate students in geography and should be used as a basic text in training students who are entering upon professional work in geography.

In the treatment of each physiographic province, the author has described the boundaries and the general type of topography under consideration. He has presented the essential structure and structural relations which are fundamental in the understanding of the topography. After full descriptions of the various sub-divisions, he has presented, in clear form, a physiographic history which in each case has involved an interpretation of all available literature. References to original sources are given on almost every page so that those who wish to secure fuller descriptions may readily find that material.

One of the very attractive features in the volume is the frank admission, on the part

of the author, of the unsettled or open problems in the field of American physiography. In that quality he has presented a challenge to the younger workers in geography. He has opened up opportunities for others. Many of the controversies which have arisen due to differences in the interpretation of field conditions are clearly stated so that others who wish to enter the field and clear up some of these unsettled questions may know just where to take hold and make the next contribution.

There is one wonderfully attractive large problem which is hinted at but which still awaits ample presentation. The physiography of one region may in time be well worked out and so may the physiography of an adjoining region, but the relationships which hold in the physiographic histories of those two regions and in the histories of several adjoining regions, open up still greater possibilities for contributions to the physiography of our continent. We will not know the full significance of physical changes in the western part of the United States until we have unraveled the relationships between these various regions. We will not know the history of our climates in the western part of the United States until we have unraveled the post mesozoic physical history of the landscape. We will not be in a position to intelligently interpret archeological records in that part of our country until we have solved these larger problems in climatic changes and in the evolution of the land forms.

With the production of this volume, which is a masterly piece of work, we have at hand a summary of what has been done and of most everything that is known relative to the Physiography of Western United States, but in the truly scientific spirit in which the volume is written we have a still greater contribution. It should inspire many of those who are interested in geographical research to go farther and farther into this attractive field of investigation.

Clark University WALLACE W. ATWOOD

Owen Lattimore. **High Tartary.** 370 pp. 28 photos, 2 maps. An Atlantic Monthly Press Publication issued by Little, Brown, & Co., Boston. 1930. $4.00

It is a tale of high adventure relating the experiences of a man and wife along the old historic caravan routes of the mountain-enclosed basins and plateaus of dry central Asia. Traveling from Peiping by different routes, Mrs. Lattimore thru Siberia, and her husband by way of Mongolia, they met at Chungchak on the northwest frontier of Chinese Turkestan. From there they turned into Chinese Central Asia and following routes of trade and routes of nomadic migration for eight months, finally crossed the Himalayas and entered Kashmir. The chief interest of the writer was in a comparison of the modern overland trade routes with those which were followed by the ancient caravans. Mr. Lattimore's long residence in China, his familiarity with the language and his thoro acquaintance with the history, politics, customs and habits of the peoples of the Celestial Empire, cause his observations and interpretations to assume an authoritative tone. While the geographer may regret that such an able observer has not left upon the pages of his book a more complete record of the characteristics of the country thru which he passed, nevertheless he will find scattered here and there thruout the volume valuable descriptions of some bit of terrain, or a population group which he can turn to professional use. The following description together with an excellent full-page photograph of the spring migration of a nomadic group in Turkestan illustrates the point.

"The sun was high and we had not yet struggled to the middle of the snow when we began to meet Torguts and Qazaqs, more companies of the same migrants that we had seen already in camp the night before. They were strung out in irregular caravans, grouped in units of camps, reaching further back into the snow than we could see;

miles and miles of tribesmen measuring their skilled knowledge of wilderness travel in the ordeal of the Great Spring Migration. First came pony herds, driven ahead to trample down the going, herded by the most hardy and skillful of the young men, armed with long poles with a running noose of rope at the end—a crude anticipation of the lasso—the herding pole of the Qazaqs and Mongols. After them came oxen and cows, loaded with tents, babies in their cradles, new-born lambs; or bestridden by women with babies in front of them and puppies or cooking pots tied on behind. Behind them again were the camels, more heavily laden still, sprawling frequently on the slippery footing that camels hate most and having to be rescued with digging, beating, and pulling of the tail. Many of the cow camels carried their January-born calves lashed on top of their own loads, bulging with yurt-felts and the tent-chests in which the nomad carries his more precious things. The calves nodded and bobbed unconcernedly in their high nests; but the mothers could not see them, and, thinking them lost, howled and moaned bubblingly, one of the worst of noises. Last of all came the sheep, in bumping, humping, struggling flocks; slowest and most unhandy of all the stock, but precious, being the basis of wealth in the nomadic life; thousands of sheep and a few hundred goats. They were in the charge of half-grown boys and girls, riding half-grown ponies and bullocks and cows, who leaned frequently from their rude saddles to pick up exhausted lambs until cantle and pommel were all hung about with little bleating bundles of wool and snow. The lambs ranged all the way from the autumn-born, already able to fend for themselves, through the winter-born to the spring-born; nor was the season over, for at least one ewe cast her lamb on the march, as I saw. The great camp dogs ran where they liked, quiet on the march as a good dog should be, but the shivering greyhounds were dragged in leash. Most valuable of all, the hooded berkut, the magnificent hunting eagles, were in the charge of graybeards not fit for active work up and down the line of the caravan, whose burdened wrists were supported on crutches, socketed in the stirrup. Then there would be a long gap in the trampled snow, before we had toiled toward the next caravan and they had toiled toward us."

University of Wisconsin GLENN T. TREWARTHA

Samuel White Patterson. **The Geography of New York and Far-Away Lands.** 195 pp. Noble and Noble, New York. 1929.

This book conforms to the Course of Study and Syllabus in Geography for the schools of New York City. The major divisions of the book are: (1) How We Live, (2) How Others Live, (3) Home Geography, (4) The Story of New York, and (5) Places of Historic Interest in New York City. A special presentation of the life of the Eskimo and the Congo native is given in order that the pupil will be able to appreciate more readily his dependence on a complex environment. Provision is made for pupil activities thru (1) Class Excursions, (2) The Preparation of Exhibits, (3) Drawing and Constructive Work, and (4) Class Projects. Elementary notions concerning both the geography and history of New York City are included. In view of the importance of New York City, this book can be used to advantage as a supplementary reader for lower grade work in all parts of the United States.

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